



**STATE OF TENNESSEE**  
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**  
**DIVISION OF UNDERGROUND STORAGE TANKS**  
**COMPLIANCE GUIDANCE DOCUMENT - 110**

**EFFECTIVE DATE - July 29, 1996**  
**(REVISION DATE - July 19, 1999)**

**RE: REQUIREMENTS FOR LEAK DETECTION ON UNDERGROUND  
PRESSURIZED PIPING**

The purpose of this guidance document is to assist the regulated community in understanding the regulatory requirements for *Rule 1200-1-15-.04(2)(b)*. This rule states the following:

1. *Pressurized piping. Underground piping that conveys petroleum under pressure must:*
  - (I) *Be equipped with an automatic line leak detector conducted in accordance with Rule 1200-1-15-.04(4)(a); and*
  - (ii) *Have an annual line tightness test conducted in accordance with Rule 1200-1-15-.04(4)(b) or have monthly monitoring conducted in accordance with Rule 1200-1-15-.04(4)(c).*

***Rule 1200-1-15-.04 (4) states the following:***

*Methods of release detection for piping. Each method of release detection for piping used to meet the requirements of Rule 1200-1-15-.04(2) must be conducted in accordance with the following:*

- (a) *Automatic line leak detectors. Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of petroleum through piping or triggering an audible or visual alarm may be used only if they detect leaks of 3 gallons per hour at 10 pounds per square inch line pressure within 1 hour. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.*
- (b) *Line tightness testing. A periodic test of piping may be conducted only if it can detect a 0.1 gallon per hour leak rate at one and one-half times the operating pressure.*
- (c) *Applicable tank methods. Any of the methods in Rule 1200-1-15-.04(3) (e) through (h) may be used if they are designed to detect a release from any portion of the underground piping that routinely contains petroleum.*

## INTRODUCTION

Pressurized piping has become an integral part of the petroleum industry. Petroleum conveyed under pressure allows one to pump fuel faster, consequently, more product is sold. Although, this is a very advantageous aspect of pressurized piping there are some disadvantages as well.

In a pressurized piping system, a submerged centrifugal pump located on top of the tank moves stored product from the tank to the dispenser. The delivery piping extends from the pump discharge point to the dispenser. The product is essentially “pushed” from the tank under positive pressure.

Piping and associated loose fittings cause the majority of petroleum releases from UST systems. Catastrophic releases can occur very quickly if a hole or break occurs in a pressurized pipeline. The pump will continue to push product through the line and through the hole or break. Higher line pressures will result in higher leak rates when a hole develops.

It is not hard for one to see that if faulty piping is “pressurized” with petroleum what will be the result. Release detection is required for pressurized piping. There are several types of release detection methods for pressured piping and each method has advantages.

## REQUIREMENTS FOR PRESSURIZED PIPING

Pressurized piping must have one leak detection method from each set below:

### 1) Automatic Line Leak Detector:

- Mechanical (flow shutoff, or flow restrictor); or
- Electronic; or
- Continuous alarm system (audible or visible alarm)

### 2) Other Methods:

- Monthly groundwater monitoring; or
- Monthly vapor monitoring; or
- Monthly interstitial monitoring; or
- Monthly Statistical Inventory Reconciliation (SIR); or
- Annual line tightness testing; or
- Monthly test (0.2 gph) or annual test (0.1 gph) result of electronic line leak detector.

### Automatic Line Leak Detectors:

At installation, the automatic line leak detector (ALLD) must be able to detect a leak as small as 3 gallons per hour at a line pressure of 10 pounds per square inch. The ALLD must shut off product flow, restrict product flow, or trigger an audible or visual alarm. An annual test must be conducted in accordance with the manufacturer’s requirements on each ALLD to ensure it is

operating as designed. ALLD manufacturers specify when their equipment is no longer operating as designed and must be replaced.

ALLDs monitor line pressure in a variety of ways. For example, pressure decreases over time, the time it takes to reach operating pressure, and pressure fluctuations.

- Flow restrictors keeps the product flow at 3 gallons per hour when a leak is detected. This pressure is well below the usual flow rate.
- A flow shutoff completely cuts off product flow or shuts down the pump when a leak is detected.
- A continuous alarm system constantly monitors line conditions and immediately triggers an audible and/or visual alarm if a leak is detected. Automated vapor or interstitial line monitoring systems can also operate continuously by sounding an alarm, flashing a signal on the console, or ringing a telephone in a manager's office when a leak is detected.

#### **Line Tightness Testing:**

If line tightness testing is selected, it must be conducted annually. A line tightness test must be able to detect a leak as small as 0.1 gallon per hour at one and one-half times its normal operating pressure. For more information concerning line tightness testing, see Compliance Guidance Document (CGD)- 112.

#### **Groundwater Monitoring, Vapor Monitoring, Interstitial Monitoring, and SIR:**

Groundwater monitoring, vapor monitoring, SIR, and interstitial monitoring all have the same regulatory requirements for piping as they do for tanks. For more information concerning these methods of monthly monitoring see Compliance Guidance Documents (CGDs)- 105, 106, 107, and 108 respectively.

#### **Sump Sensors:**

Sump sensors installed in secondary containment systems which operate continuously and provide a positive shutoff of the submersible pump when the presence of petroleum is detected may be used to satisfy both requirements for catastrophic and monthly line leak detection.

### **REPORTING AND RECORDKEEPING**

If the results from any tightness testing indicate the tank and/or lines may have had a release of petroleum, then the Division must be notified within 72 hours of a confirmed release. Owners and/or operators must take immediate action to prevent any further release of the petroleum into the environment, and take immediate action to identify and mitigate fire, explosion, and vapor hazards. Owners and/or operators must repair, replace, or upgrade the UST and/or piping, and begin corrective action in accordance with *Rule 1200-1-15-.06* if the test results for the system, tank, or delivery piping indicate that a leak exists.

If monitoring results from the ALLDs, groundwater monitoring, vapor monitoring, interstitial monitoring, or SIR indicate the UST system may have had a release, then the owner and/or operator shall notify the Division within 72 hours and begin release investigation and confirmation steps in accordance with *Rule 1200-1-15-.05(3)*. This applies unless the monitoring device is found to be defective, and is immediately repaired, recalibrated, or replaced, and additional monitoring does not confirm the initial result. If the monitoring device is determined to be defective and a suspected release was not reported to the Division, the owner/operator shall document that the device was defective and the actions taken for correction. This documentation shall also include additional monitoring results.

Results of the most recent tightness testing must be maintained. Results of testing from monthly monitoring must be maintained for at least one year.

ALLD must be tested annually and results maintained for at least one year. The results should include, but is not necessarily limited to the following:

1. Printed and signed name of the individual checking and recording the test results.
2. Date testing was performed.
3. Results of testing and/or status of ALLDs.
4. If a problem was detected, describe what actions were taken.

Records of all calibration, maintenance, and repair of release detection equipment that is permanently located on-site, must be maintained for at least one year after the servicing work is completed. Any schedules of required calibration and maintenance provided by the release detection equipment manufacturer must be retained for five (5) years from the date of installation. Records of the UST system repairs must be maintained for the life of the UST system.

Records must be kept at the UST site and be immediately available for inspection by the Division, or at a readily available alternative site and be provided for inspection to the Division upon request.